IN THE CLAIMS

Please amend the Claim as follows:

1. (currently amended) A device for measuring the flow rate of a substantially continuous fluid flow comprising

a conduit for transporting in a selected direction a continuous fluid flow varying in height up to a maximum height wherein said maximum height is less than the height which would occlude said conduit;

a detector positioned relative to said conduit for determining the height of a selected section of said substantially continuous fluid flow at a first predetermined location and for determining at a second predetermined location located in a selected direction and a known distance from said first predetermined location that said selected section of said continuous fluid flow has traversed from said first predetermined location to said second predetermined location, said detector having a first detection section and a second detection section and wherein said first detection section and said second detection section are located within said conduit, said first detection section comprising a first sensor having a predetermined cross-sectional area defining an opening for passing said fluid flow therethrough wherein said predetermined cross-sectional area is greater than the cross-sectional area of said fluid flow passing therethrough and wherein said second detection section comprises a second sensor having a cross-

sectional area substantially equal to the cross-sectional area of the first sensor; and

a processing device operatively connected to said detector for deriving the cross-sectional area of said selected section of the substantially continuous fluid flow from said height of a selected section determined by said detector at said first predetermined location, determining an elapsed time for the selected section of said continuous fluid flow to transverse said known distance and for calculating therefrom the fluid flow of said substantially continuous fluid flow through said conduit.

2. (canceled).

3. (canceled).

4. (canceled).

5. (canceled).

6. (canceled).

7. (canceled).

8. (canceled).

9. (canceled).

10. (original) A fluid flow device comprising

a conduit for transporting in a selected direction an electrically conductive substantially continuous fluid flow varying in height up to a maximum height wherein said maximum height is less than the height which would occlude said conduit;

a first sensor having a predetermined cross-sectional area defining an opening for passing said fluid flow therethrough and

being located at a first predetermined location within said conduit, said predetermined cross-sectional area being greater than the cross-sectional area of said fluid flow passing therethrough, said first sensor being operative to determine the height of a selected section of said substantially continuous fluid flow at said first predetermined location as a function of that portion of said predetermined section of said first sensor enclosed by the selected section of said continuous fluid flow at said first predetermined location; and

a second sensor having a cross-sectional area substantially equal to the cross-sectional area of the first sensor and being positioned relative to said conduit and said first sensor and being operative to determine at a second predetermined location located in a selected direction and a known distance from said first predetermined location the height of the selected section of said substantially continuous fluid flow at said second predetermined location as a function of that portion of said predetermined cross-sectional area of said second sensor enclosed by the selected section of said substantially continuous fluid flow at said second predetermined location.

11. (original) The fluid flow device of claim 10 further comprising

a conductivity sensor located within said conduit and positioned to be in substantially continual contact with said substantially

continuous fluid flow for measuring the conductivity of said electrically conductive continuous fluid flow.

12. (original) The fluid flow device of claim 11 further comprising

a processing device operatively connected to said first sensor, said second sensor and said conductivity sensor for deriving the cross-sectional area of said electrically conductive continuous fluid flow from the height of the selected section of said substantially continuous fluid flow determined by said first sensor, determining an elapsed time for the selected section of said continuous fluid flow to traverse said known distance between said first sensor and said second sensor and for calculating therefrom the fluid flow of the substantially continuous fluid flow through said conduit compensated for variances of fluid conductivity measured by said conductivity sensor.

13. (original) The fluid flow device of claim 10 wherein said first sensor is a pair of spaced, coaxially aligned rings.

14. (original) The fluid flow device of claim 13 wherein said second sensor is a pair of spaced, coaxially aligned rings.

15. (original) The fluid flow device of claim 14 wherein said first sensor pair of spaced, coaxially aligned rings have a selected diameter and wherein said second sensor comprise a pair of spaced, coaxially aligned rings having a diameter substantially equal to said selected diameter.

16. (original) The fluid flow device of claim 15 wherein said conduit has an internal diameter and said selected diameter is substantially equal to the internal diameter of said conduit.

17. (original) The fluid flow device of claim 11 wherein said conductivity sensor is located proximate at least one of said first sensor and second sensor.

18. (original) The fluid flow device of claim 12 wherein said processing device further includes

an integrating device for determining an average height of a plurality of selected sections of said substantially continuous fluid flow and an average conductivity of said fluid flow;

a conductivity compensating device operatively connected to said integrating device for determining variances in conductivity of the electrically conductive fluid forming the fluid flow; and

a generator responsive to the integrating device for generating an output signal representing the fluid flow compensated for variances in conductivity.

19. (original) A milk flow device comprising

a conduit for transporting in a selected direction a continuous milk flow varying in height up to a maximum height within said conduit wherein said maximum height is less than the height which would occlude said conduit;

a first sensor having a predetermined cross-sectional area defining an opening for passing a milk flow therethrough and being located at a predetermined location in said conduit, said

predetermined cross-sectional area being greater than the cross-sectional area of a milk flow passing therethrough for determining the height of a selected section of milk flow at said predetermined location as a function of that portion of said predetermined cross-sectional area enclosed by the selected section of the continuous milk flow at said predetermined location and conductivity of milk; and

a second sensor having a cross-sectional area substantially equal to the cross-sectional area of the first sensor and being spaced within said conduit in a selected direction and a known distance from first sensor for determining the height of said selected section of the continuous milk flow at said known distance as a function of that portion of said predetermined cross-sectional area enclosed by the selected section of the continuous milk flow at said known distance and conductivity of milk.

20. (original) The milk flow device of claim 19 further comprising

a conductivity sensor positioned to be in substantially continual contact with said continuous milk flow for measuring conductivity of said milk.

21. (original) The milk flow device of claim 20 further comprising

a processing device operatively connected to said first sensor, said second sensor and said conductivity sensor for

deriving the cross-sectional area of a said milk flow from the height of said selected section of the milk flow as determined by said first sensor, determining an elapsed time for said selected section of the milk flow to traverse said known distance between said first sensor and said second sensor and for calculating milk flow through said conduit based on area of said fluid flow and elapsed time of said selected section of milk flow over said known distance compensated for variances of milk conductivity measured by said conductivity sensor.

22. (original) The milk flow device of claim 21 wherein said first sensor is a pair of spaced, coaxially aligned rings.

23. (original) The milk flow device of claim 22 wherein said second sensor is a pair of spaced, coaxially aligned rings.

24. (original) The milk flow device of claim 22 wherein said first sensor pair of spaced, coaxially aligned rings have a selected diameter and wherein said second sensor comprises a pair of spaced, coaxially aligned rings having a diameter substantially equal to said selected diameter.

25. (original) The milk flow device of claim 24 wherein said conduit has an internal diameter and said selected diameter is substantially equal to the internal diameter of said conduit.

26. (original) The milk flow device of claim 21 wherein said processing further includes

an integrating device for determining an average fluid flow height of a plurality of selected sections of milk flow and an average conductivity of said milk flow;

a conductivity compensating device operatively connected to said integrating device containing data representing variances in conductivity of the milk forming the milk flow; and

a generator responsive to the integrating device for generating an output signal representing the milk flow compensated for variances in milk conductivity developed from said conductivity compensating device.

27. (original) The milk flow device of claim 26 wherein said processing device includes an output device responsive to said output signal for displaying milk flow in at least one of gallons per minute and total weight.

28. (original) A milk flow meter comprising

a conduit for transporting in a selected direction assisted by gravity a milk flow which varies in height wherein the height of said milk flow is less than the height which would occlude said conduit;

a first sensor having a selected cross-sectional area located at a predetermined location within said conduit wherein said selected cross-sectional area of said first sensor is greater than the cross-sectional area of said selected cross-sectional area of the milk flow for determining the height of a selected section of milk flow passing at said predetermined

location based on the portion of the cross-sectional area of said first sensor enclosed by the selected section;

a second sensor having a cross-sectional area substantially equal to the cross-sectional area of the first sensor and being spaced in said conduit in a selected direction and a known distance from first sensor for determining the height of said selected section of the continuous milk flow at said known distance based on the portion of the cross-sectional area of said second sensor enclosed by the selected section; and

a conductivity sensor located within said conduit in the proximity of at least one of said first sensor and said second sensor and positioned to be in substantially continual contact with said milk flow for determining conductivity of said milk.

29. (original) The milk flow meter of claim 28 further comprising

a processing device operatively connected to said first sensor, said second sensor and said conductivity sensor for deriving the cross-sectional area of said milk flow from said height of said selected section of the continuous milk flow determined by said first sensor and an elapsed time for said selected section of the continuous milk flow to traverse said known distance and for deriving therefrom milk flow through said conduit independent of variances of milk conductivity.

30. (original) The milk flow meter of claim 28 wherein said conduit has a predetermined geometrical shape and said first

sensor is a pair of spaced, coaxially aligned electrodes having a geometrical shape which is at least one of a shape substantially the same as said predetermined shape and a shape different than said predetermined shape.

31. (original) The milk flow meter of claim 30 wherein said second sensor is a pair of spaced, coaxially aligned electrodes having a geometrical shape which is at least one of a shape substantially the same as said predetermined shape and a shape different than said predetermined shape.

32. (original) The milk flow meter of claim 30 wherein the geometrical shape of at least one of said first sensor and said second sensor is a substantially circular shape.

33. (original) The milk flow meter of claim 30 wherein the geometrical shape of at least one of said first sensor and said second sensor is a substantially oval shape.

34. (original) The milk flow meter of claim 30 wherein the geometrical shape of at least one of said first sensor and said second sensor is a substantially triangular shape.

35. (original) The milk flow meter of claim 30 wherein said the geometrical shape of at least one of said first sensor and said second sensor is a substantially rectangular shape.

36. (original) The milk flow meter of claim 35 wherein said the substantially rectangular shape of at least one of said first sensor and said second sensor is a substantially square shape.

37. (original) The milk flow meter of claim 30 wherein the geometrical shape of at least one of said first sensor and said second sensor is a substantially trapezoid shape.

38. (original) The fluid flow device of claim 29 wherein said processing device further includes

an integrating device for determining an average fluid flow height of a plurality of selected sections of milk flow and an average conductivity of said milk flow;

a conductivity compensation device operatively connected to said integrating device for deriving data representing variances in conductivity of the electrically conductive fluid forming the milk flow; and

a generator responsive to the integrating device for generating an output signal representing the milk flow compensated for variance in fluid conductivity developed by said conductivity compensation device.

39. (canceled).

40. (canceled).

41. (canceled).

42. (canceled).

43. (canceled).

44. (canceled).

45. (canceled).

46. (currently amended) A method for measuring the flow rate of a continuous fluid flow comprising

transporting within a conduit in a selected direction a continuous fluid flow varying in height up to a maximum height wherein said maximum height is less than the height which would occlude said conduit;

determining with a detector at a first predetermined location the height of a selected section of the continuous fluid flow at said first predetermined location and for determining at a second predetermined location located in a selected direction and a known distance that said selected section of the continuous milk flow has traversed from said first predetermined location to said second predetermined location <u>wherein the step of determining with said detector includes said detector having a first detection section for determining at said first predetermined location the height of a said selected section of the continuous milk flow and a second detection section for</u>

determining the height of said selected section of the continuous milk flow low at said second predetermined location; and

deriving with a processing device operatively connected to said detector the cross-sectional area of said continuous fluid flow determined by said detector from said height of said selected section of the continuous milk flow at said first predetermined location, determining an elapsed time for the selected section of said continuous milk flow to traverse said known distance and calculating therefrom fluid flow rate of the continuous fluid flow through said conduit.

47. (canceled).

48. (canceled).

49. (canceled).

50. (original) A method of measuring milk flow in a conduit wherein the maximum height of said milk flow is less than a height which would occlude said conduit comprising the steps of:

sloping said conduit at an angle to have milk flow in a selected direction assisted by gravity;

measuring with a first sensor having a known cross-sectional area located at a predetermined location in said conduit the height of a selected section of a continuous milk flow at said predetermined location a cross-sectional area of said first sensor and conductivity of milk forming said milk flow wherein the cross-sectional area of the milk flow is less than said known cross-sectional area;

determining with a second sensor located in a selected direction and known distance from said first sensor wherein said second sensor has a cross-sectional area substantially equal to the known cross-sectional area of the first sensor that the selected section of said continuous milk flow has traversed said known distance as functions of based on the known cross-sectional area of said second sensor and conductivity of said milk;

determining with a conductivity sensor located in said conduit and positioned in substantially continue contact with said milk flow conductivity of said milk; and

deriving with a processing device operatively connected to said first sensor, said second sensor and said conductivity sensor the cross-sectional area of said milk flow from said height of said selected section of the continuous milk flow determined by said first sensor and an elapsed time for said selected section of the continuous milk flow milk flow to traverse said known distance a milk flow rate through said conduit independent of variances of milk conductivity.

51. (canceled).

52. (canceled).

53. (canceled).

54. (canceled).

55. (canceled).

56. (canceled).

57. (canceled).